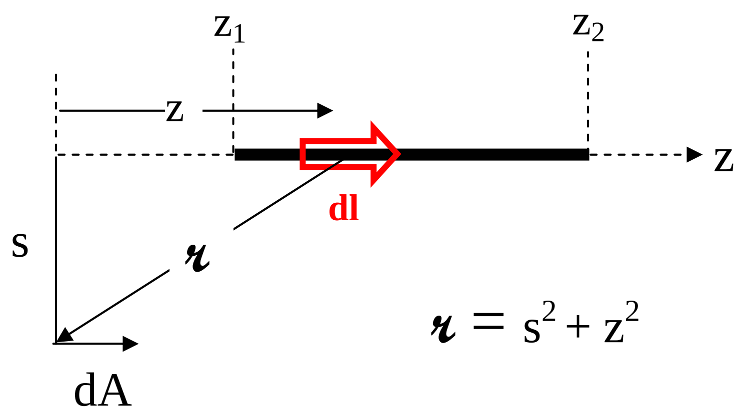
Griffiths 5.22 (Magnetic vector potential for a finite wire)

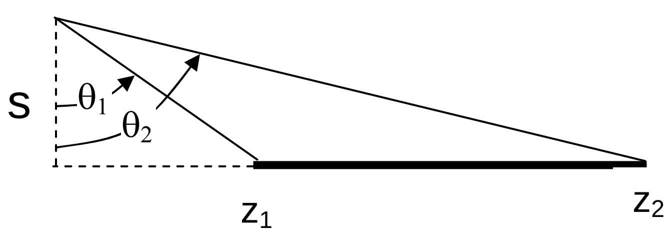


$$\vec{A}(\vec{r}) = \frac{\mu_o I}{4\pi}\int \frac{d\vec{l}}{\mathscr{r}} = \frac{\mu_o I}{4\pi}\int_{z_1}^{z_2} \frac{dz}{\sqrt{s^2+z^2}}\ \hat{z} = \frac{\mu_o I}{4\pi}\ln\left[\frac{z_2+\sqrt{s^2+z_2^2}}{z_1+\sqrt{s^2+z_1^2}}\right]\hat{z}$$

$$\vec{B} = \nabla\times\vec{A} = -\frac{\partial A_z}{\partial s}\hat{\varphi} = -\frac{\mu_o I}{4\pi}\left[\frac{s\left(s^2+z_2^2\right)^{-1/2}}{z_2+\sqrt{s^2+z_2^2}} - \frac{s\left(s^2+z_1^2\right)^{-1/2}}{z_1+\sqrt{s^2+z_1^2}}\right]\hat{\varphi}$$

$$\vec{B} = -\frac{\mu_o I}{4\pi}\left[\frac{s\left(s^2+z_2^2\right)^{-1/2}}{z_2+\sqrt{s^2+z_2^2}}\left(\frac{z_2-\sqrt{s^2+z_2^2}}{z_2-\sqrt{s^2+z_2^2}}\right) - \frac{s\left(s^2+z_1^2\right)^{-1/2}}{z_1+\sqrt{s^2+z_1^2}}\left(\frac{z_1-\sqrt{s^2+z_1^2}}{z_1-\sqrt{s^2+z_1^2}}\right)\right]\hat{\varphi}$$

$$\vec{B} = \frac{\mu_o I}{4\pi s}\left[\frac{z_2}{\sqrt{s^2+z_2^2}} - \frac{z_1}{\sqrt{s^2+z_1^2}}\right]\hat{\varphi}$$



$$\vec{B} = \frac{\mu_o I}{4\pi s}\left[\sin(\theta_2) - \sin(\theta_1)\right]\hat{\varphi}$$